

AMENDMENTS TO THE CLAIMS

A listing of all claims and their current status in accordance with 37 C.F.R. §1.121(2) is provided below.

1. (Previously Presented) A method, comprising:

receiving at least one digital image data input stream from an image source, said digital image data input stream containing digital image information;

creating at least two digital image data streams from said at least one digital image data input stream, each of said at least two digital image data streams comprising at least a portion of said digital image information;

converting said at least two digital image data streams into at least two respective output image streams; and

providing said at least two respective output image streams for transmission together without image compression across a video transmission interface that has insufficient transmission capacity to transmit said at least one input digital image data stream without image compression.

2. (Previously Presented) The method of claim 1, further comprising:

providing said at least two respective output image streams for transmission together without image compression from said image source across said video transmission interface to a device, wherein said device is at least one of a digital video recorder and a display device;

wherein said at least one input digital image data stream has a first data content,

wherein said at least two respective output image streams each has a data content less than said first data content,

and

wherein said video transmission interface has sufficient transmission capacity to transmit each of said at least two respective output image streams without image compression.

3. (Previously Presented) The method of claim 2, wherein said video transmission interface comprises an analog transmission interface,

wherein said at least two respective output image streams comprise at least two respective analog image output streams, and

wherein said method further comprises:

converting said at least two digital image data streams into said at least two respective analog image output streams; and

providing said at least two respective analog image output streams for transmission without image compression across said video transmission interface.

4. (Original) The method of claim 3, wherein one of said at least two respective analog image output streams comprises a first image having a first resolution and a first frame rate;

wherein another of said at least two respective analog image output streams comprises a second image having a second resolution and a second frame rate; and

wherein at least one of:

said first and second resolutions are different, or

said first and second frame rates are different, or

said first image comprises a different portion of said digital image data input stream than said second image, or

a combination thereof.

5. (Original) The method of claim 4, wherein said at least one digital image data input stream comprises a digital video signal received from a digital video source; and

wherein said method further comprises

providing each of said at least two respective analog image output streams as part of an analog video signal for transmission across said analog interface.

6. (Previously Presented) The method of claim 5, further comprising:

receiving said at least two respective analog image output streams as part of said analog video signal from across said analog interface;

converting each of said at least two received respective analog image output streams into at least one digital image data stream comprising said first image and into at least one digital image data stream comprising said second image; and at least one of

displaying or storing said respective first and second images, or a combination thereof.

7. (Original) The method of claim 6, wherein said first and second frame rates are different and wherein said method further comprises displaying said first image at said first frame rate while simultaneously displaying said second image at said second frame rate.

8. (Original) The method of claim 6, wherein said first and second resolutions are different and wherein said method further comprises displaying said first image at said first resolution while simultaneously displaying said second image at said second resolution.

9. (Original) The method of claim 6, wherein said creating comprises using scaling to create said first image as a zoomed image prior to said step of converting said at least two digital image data streams into said at least two respective analog image output streams;

wherein said second image is not a zoomed image; and

wherein said step of displaying comprises displaying said zoomed first image while simultaneously displaying said second unzoomed image.

10. (Previously Presented) The method of claim 3, wherein said digital image information comprises an original image;

wherein said step of creating comprises segmenting at least a part of said original image into at least

a first image tile segment comprising a first portion of said original image in a first digital image data stream, and

a second image tile segment comprising a second portion of said original image in a second digital image data stream,

said first and second portions of said original image being different portions of said original image having a position relative to each other within said original image;

wherein said step of converting comprises converting said first and second digital image data streams into respective first and second analog image output streams; and

wherein said method further comprises:

receiving said at first and second analog image output streams as part of said analog video signal from across said analog transmission interface,

converting each of said received first and second analog image output streams into respective third and fourth digital image data streams comprising said respective first and second image tile segments, and

reassembling said first and second tile segments from said third and fourth digital data streams to form said at least a part of said original digital image.

11. (Previously Presented) The method of claim 1, wherein said video transmission interface comprises a digital transmission interface.

12. – 24. (Previously Cancelled)

25. (Previously Presented) A method, comprising:

receiving a digital image data from an image source;

processing said digital image data in a first processing operation to create first processed image data;

processing said digital image data in a second processing operation to create second processed image data; and

providing said first and second processed image data for communication together without image compression across a video transmission interface that has insufficient transmission capacity to transmit said digital image data without image compression,

wherein at least one of:

said first processed image data has an image resolution that is different from an image resolution of said second processed image data, or

said first processed image data is provided for communication across said video transmission interface at an image frame rate that is different from an image frame rate at which said second processed image data is provided for communication from image source across said video transmission interface, or

said first processed image data comprises a different portion of said digital image data than said second processed image data, or

a combination thereof.

26. (Previously Presented) The method of claim 25, further comprising:

providing said first and second processed image data for communication together without image compression across said video transmission interface to a device, wherein said device is at least one of a digital video recorder and a display device.

27. (Previously Presented) The method of claim 26,

wherein said video transmission interface comprises an analog interface;

wherein said method further comprises converting said first and second processed image data to respective first and second analog image information for communication together across said analog interface; and

wherein said method further comprises converting said first and second analog image information back into said respective first and second processed image data after receiving said first and second analog image information from across said analog interface.

28. (Previously Cancelled)

29. (Original) The method of claim 27, wherein each of said first and second processing operations comprises at least one of an image scaling operation, an image windowing operation, an image deconstruction operation, or a combination thereof.

30. (Original) The method of claim 27, wherein each of said first processed image data and said second processed image data comprises a windowed image, a scaled image, or a image tiled segment.

31. (Previously Presented) The method of claim 25, further comprising:

processing said digital image data in a third processing operation to create third processed image data; and

wherein at least one of:

said third processed image data has an image resolution that is different from an image resolution of said first and second processed image data, or

said third processed image data is provided for communication across said common interface at an image frame rate that is different from image frame rates at which said first and second processed image data is provided for communication across said common interface, or

said third processed image data comprises a different portion of said digital image data than said first and second processed image data, or

a combination thereof.

32. (Previously Presented) The method of claim 25, wherein said video transmission interface comprises a digital transmission interface.

33. – 59. (Previously Cancelled)

60. (Previously Presented) Multiple stream image creation circuitry configured to receive at least one digital image data input stream containing digital information, said multiple stream image creation circuitry comprising multi-stream image processing circuitry configured to:

create at least two digital image data streams from said at least one digital data input stream, each of said at least two digital image data streams comprising at least a portion of said digital image information;

convert said at least two digital image data streams into at least two respective output image streams; and

provide said at least two respective output image streams for transmission together without image compression from an image source across a video transmission interface that has insufficient transmission capacity to transmit said digital image data input stream without image compression.

61. (Previously Presented) The multiple stream image creation circuitry of claim 60,

wherein said at least one input digital image data stream has a first data content;

wherein said at least two respective output image streams each has a data content less than said first data content; and

wherein said common video transmission interface has sufficient transmission capacity to transmit each of said at least two respective output image streams.

62. (Previously Presented) The multiple stream image creation circuitry of claim 61, wherein said video transmission interface comprises an analog interface;

wherein said at least two respective output image streams comprise at least two respective analog image output streams; and

wherein said multiple stream image creation circuitry further comprises conversion circuitry configured to:

convert said at least two digital image data streams into said at least two respective analog image output streams; and

provide said at least two respective analog image output streams for transmission without image compression from said image source across said video transmission interface to a device.

63. (Previously Presented) The multiple stream image creation circuitry of claim 62,

wherein one of said at least two digital image data streams comprises a first image having a first resolution and being provided at a first frame rate for transmission without image compression across said video transmission interface;

wherein another of said at least two digital image data streams comprises a second image having a second resolution and being provided at a second frame rate for transmission without image compression across said video transmission interface; and

wherein at least one of:

 said first and second resolutions are different, or

 said first and second frame rates are different, or

 said first image comprises a different portion of said digital image data input stream than said second image, or

 a combination thereof.

64. (Original) The multiple stream image creation circuitry of claim 63, wherein said at least one digital image data input stream comprises a digital video signal received from a digital video source; and wherein said multiple stream image creation circuitry is configured to provide each of said at least two respective analog image output streams as part of an analog video signal for transmission across said analog interface.

65. (Original) The multiple stream image creation circuitry of claim 60, wherein said multi-stream image processing circuitry comprises at least one window circuitry component, at least one image scaler circuitry component, and at least one image mux circuitry component; and wherein said at least one window circuitry component, at least one image scaler circuitry component, and at least one image mux circuitry component are operably coupled to create said at least two digital image data streams from said at least one digital data input stream, and to convert said at least two digital image data streams into said at least two respective output image streams.

66. (Original) The multiple stream image creation circuitry of claim 60, wherein said multi-stream image processing circuitry further comprises at least one image deconstruction circuit component, at least one alignment data circuitry component, and at least one image mux circuitry component; and wherein said at least one image deconstruction circuit component, at least one alignment data circuitry component, and at least one image mux circuitry component are operably coupled to create said at least two digital image data streams from said at least one digital data input stream, and to convert said at least two digital image data streams into said at least two respective output image streams.

67. (Original) The multiple stream image creation circuitry of claim 60, wherein said multi-stream image processing circuitry further comprises at least one window circuitry component, at least one image scaler circuitry component, at least one image deconstruction circuit component, at least one alignment data circuitry component, and at least one image mux circuitry component; and wherein said at least one window circuitry component, at least one image scaler circuitry component, at least one image deconstruction circuit component, at least one alignment data circuitry component, and at least one image mux circuitry component are operably coupled to create said at least two digital image data streams from said at least one digital data input stream, and to convert said at least two digital image data streams into said at least two respective output image streams.

68. (Previously Presented) An image processing system comprising the multiple image creation circuitry of claim 67, and further comprising said device coupled to said multiple image creation circuitry by said video transmission interface, said device configured to:

receive said at least two respective output image streams from across said video transmission interface,

convert each of said at least two received respective analog image output streams into at least one digital image data stream comprising said first image and into at least one digital image data stream comprising said second image; and

at least one of store said respective first and second images, provide said first and second images for simultaneous display, or a combination thereof,

wherein said device is at least one of a digital video recorder and a display device.

69. (Previously Presented) An image processing system comprising the multiple image creation circuitry of claim 60, and further comprising said device coupled to said multiple image creation circuitry by said video transmission interface, said device configured to receive said at least two respective output image streams from across said video transmission interface.

70. (Previously Presented) An image processing system comprising the multiple image creation circuitry of claim 64, and further comprising said device coupled to said multiple image creation circuitry by said analog interface, said device configured to:

receive said at least two respective analog image output streams as part of said analog video signal from across said analog interface;

convert each of said at least two received respective analog image output streams into at least one digital image data stream comprising said first image and into at least one digital image data stream comprising said second image; and

at least one of store said respective first and second images, provide said first and second images for simultaneous display, or a combination thereof.

71. (Previously Presented) An image processing system comprising the multiple image creation circuitry of claim 64, and further comprising said device coupled to said multiple image creation circuitry by said analog interface,

said device comprising a PC-based digital video recorder configured to:

receive said at least two respective analog image output streams at said device as part of said analog video signal from across said analog interface;

convert each of said at least two received respective analog image output streams into at least one digital image data stream comprising said first image and into at least one digital image data stream comprising said second image;

compress said at least one digital image data stream to form compressed image information; and

further transmit said compressed image information from said device to other viewing stations via a local area network (LAN) or a wide area network (WAN).

72. (Original) The image processing system of claim 70, wherein said first and second frame rates are different and wherein said multiple stream image receiving circuitry is further configured to provide said

first image for display at said first frame rate while simultaneously providing said second image for display at said second frame rate.

73. (Previously Presented) The image processing system of claim 70, wherein said first and second resolutions are different and wherein said device is further configured to provide said first image at said first resolution for simultaneous display with said second image at said second resolution.

74. (Previously Presented) The image processing system of claim 70, wherein said multiple image creation circuitry is further configured to use scaling to create said first image as a zoomed image prior to converting said at least two digital image data streams into said at least two respective analog image output streams; wherein said second image is not a zoomed image; and wherein said device is further configured to provide said zoomed first image for simultaneous display with said second unzoomed image.

75. (Previously Presented) An image processing system comprising the multiple image creation circuitry of claim 62, and further comprising said device coupled to said multiple image creation circuitry by said analog interface;

wherein said digital image information comprises an original image;

wherein said multi-stream image processing circuitry is further configured to segment at least a part of said original image into at least a first image tile segment comprising a first portion of said original image in a first digital image data stream, and a second image tile segment comprising a second portion of said original image in a second digital image data stream, said first and second portions of said original image being different portions of said original image having a position relative to each other within said original image; and

wherein said device is configured to:

receive said at first and second analog image output streams as part of said analog video signal from across said analog interface,

convert each of said received first and second analog image output streams into respective third and fourth digital image data streams comprising said respective first and second image tile segments, and

reassemble said first and second tile segments from said third and fourth digital data streams to form said at least a part of said original digital image.

76. (Previously Presented) The multiple stream image creation circuitry of claim 60, wherein said video transmission interface comprises a digital transmission interface.

77. (Previously Cancelled)

78. (Previously Presented) A video camera, comprising:

multiple stream image creation circuitry; and

multi-stream image processing circuitry, said multi-stream image processing circuitry comprising at least one window circuitry component configured to extract a selected portion of an original higher resolution image frame to form a lower resolution windowed partial image,

at least one image scaler circuitry component configured to scale the lower resolution windowed partial image, at least one image deconstruction circuit component configured to segment an original image frame into two or more segmented higher resolution frames or tiled higher resolution images,

at least one alignment data circuitry component configured to insert at least one of tile identification information or horizontal alignment information or vertical alignment information into unused lines of said segmented higher resolution frames or tiled higher resolution images, and

at least one image mux circuitry component configured to select either or both of said scaled lower resolution frames from said image scaler circuitry component or said higher resolution tile images from said alignment data circuitry component for transmission without image compression across a video transmission interface that has insufficient transmission capacity to transmit a digital image data input stream without image compression.

79. (Previously Presented) The video camera of claim 78, wherein said video transmission interface comprises an analog interface; and

wherein said multiple stream image creation circuitry further comprises conversion circuitry coupled between said multi-stream image processing circuitry and said analog interface.

80. (Previously Presented) An image processing system comprising:

the video camera of claim 79; and

a device including multiple stream image receiving circuitry coupled to said multiple image creation circuitry of said video camera by said analog interface,

wherein said device is at least one of a digital video recorder and a display device.

81. (Previously Presented) The image processing system of claim 80, wherein said multiple stream image receiving circuitry comprises a frame grabber and multi-stream image processing circuitry.

82. (Previously Presented) The image processing system of claim 81, wherein said multi-stream image processing circuitry of said multiple stream receiving circuitry of said digital video recorder comprises

at least one image reconstruction circuit component configured to reconstruct said segmented higher resolution frames or said tiled higher resolution images back into said original higher resolution image based on said alignment information inserted by said alignment data circuitry component into said unused lines of said segmented higher resolution frames or tiled higher resolution images,

at least one compression circuitry component configured to compress image information received by said multiple stream receiving circuitry of said digital video recorder , and at least one storage device component configured to store said compressed image information.

83. (Previously Presented) The image processing system of claim 82, wherein said analog transmission interface comprises a NTSC, PAL or SECAM interface.

84. (Previously Presented) The image processing system of claim 82, wherein said digital video recorder comprises a PC-based digital video recorder configured to transmit said compressed image information from said digital video recorder to other viewing stations via a local area network (LAN) or a wide area network (WAN).

85. (Previously Presented) The image processing system of claim 84, wherein said analog transmission interface comprises a NTSC, PAL or SECAM interface.

86. (Previously Presented) An image processing system, comprising:

a video camera including multiple image creation circuitry; and
a digital video recorder including multiple image receiving circuitry; wherein said video camera is coupled to said digital video recorder by a video transmission interface that has insufficient transmission capacity to transmit a digital image data input stream without image compression;

wherein said multiple image creation circuitry comprises multi-image processing circuitry that comprises

at least one window circuitry component configured to extract a selected portion of an original higher resolution image frame to form a lower resolution windowed partial image,

at least one image scaler circuitry component configured to scale the lower resolution windowed partial image,

at least one image deconstruction circuit component configured to segment an original image frame into two or more segmented higher resolution frames or tiled higher resolution images,

at least one alignment data circuitry component configured to insert at least one of tile identification information or horizontal alignment information or vertical alignment information into unused lines of said segmented higher resolution frames or tiled higher resolution images, and
at least one image mux circuitry component configured to select either or both of said scaled lower resolution frames from said image scaler circuitry component or said higher resolution tile images from said alignment data circuitry component for transmission without image compression across said video transmission interface from said video camera to said digital video recorder.

87. (Previously Cancelled)

88. (Previously Presented) The image processing system of claim 86, wherein said video transmission interface comprises an analog transmission interface.

89. (Previously Presented) The image processing system of claim 88, wherein said multiple stream image receiving circuitry comprises a frame grabber and multiple stream image processing circuitry.

90. (Previously Presented) The image processing system of claim 89, wherein said multi-stream image processing circuitry of said multiple stream receiving circuitry comprises

at least one image reconstruction circuit component configured to reconstruct said segmented higher resolution frames or said tiled higher resolution images back into said original higher resolution image based on said alignment information inserted by said alignment data circuitry component into said unused lines of said segmented higher resolution frames or tiled higher resolution images,

at least one compression circuitry component configured to compress image information received by said multiple stream receiving circuitry of said digital video recorder, and

at least one storage device component configured to store said compressed image information.

91. (Previously Presented) The image processing system of claim 90, wherein said analog transmission interface comprises a NTSC, PAL or SECAM interface.

92. (Previously Presented) The image processing system of claim 90, wherein said digital video recorder comprises a PC-based digital video recorder configured to transmit said compressed image information from said digital video recorder to other viewing stations via a local area network (LAN) or a wide area network (WAN).

93. (Previously Presented) The image processing system of claim 92, wherein said analog transmission interface comprises a NTSC, PAL or SECAM interface.

94. (Previously Presented) A system for processing digital image data, comprising image creation circuitry configured to:

process said digital image data in a first processing operation to create first processed image data;

process said digital image data in a second processing operation to create second processed image data; and

provide said first and second processed image data for communication together without image compression from a video camera across a video transmission interface to a device, wherein said video transmission interface has insufficient transmission capacity to transmit said digital image data without image compression

wherein at least one of:

 said first processed image data has an image resolution that is different from an image resolution of said second processed image data, or

 said first processed image data being provided for communication across said interface at an image frame rate that is different from an image frame rate at which said second processed image data is provided for communication across said video transmission interface, or

 said first processed image data comprises a different portion of said digital image data than said second processed image data, or

a combination thereof.

95. (Previously Presented) The system of claim 94, further comprising image receiving circuitry configured to:

receive said first and second processed image data together from across said video transmission interface; and

at least one of display or store said first and second processed image data on said device, wherein said device is at least one of a digital video recorder and a display device.

96. (Previously Presented) The system of claim 95, wherein said video transmission interface comprises an analog interface;

wherein said image creation circuitry is further configured to convert said first and second processed image data to respective first and second analog image information for communication together from said video camera across said analog interface to said device; and

wherein said image receiving circuitry is further configured to convert said first and second analog image information back into said respective first and second processed image data after receiving said first and second analog image information at said device from said video camera across said analog interface.

97. (Previously Presented) The system of claim 96, wherein said video transmission interface comprises a bandwidth-limited analog interface.

98. (Original) The system of claim 96, wherein each of said first and second processing operations comprises at least one of an image scaling operation, an image windowing operation, an image deconstruction operation, or a combination thereof.

99. (Original) The system of claim 96, wherein each of said first processed image data and said second processed image data comprises a windowed image, a scaled image, or a image tiled segment.

100. (Previously Presented) The system of claim 94, wherein said image creation circuitry is further configured to process said digital image data in a third processing operation to create third processed image data; and wherein at least one of:

 said third processed image data has an image resolution that is different from an image resolution of said first and second processed image data, or

said third processed image data being provided for communication across said interface at an image frame rate that is different from image frame rates at which said first and second processed image data are provided for communication across said video transmission interface, or

said third processed image data comprises a different portion of said digital image data than said first and second processed image data, or

a combination thereof.

101. (Previously Cancelled)

102. (Previously Presented) The method of claim 5, further comprising:

receiving said at least two respective analog image output streams at said device as part of said analog video signal from across said analog interface;

converting each of said at least two received respective analog image output streams into at least one digital image data stream comprising said first image and into at least one digital image data stream comprising said second image;

compressing said at least one digital image data stream in said device to form compressed image information; and

further transmitting said compressed image information from said device to other viewing stations via a local area network (LAN) or a wide area network (WAN),
wherein said device comprises a digital video recorder.